

REMARKS

Claims 1-2, 5, 8-9, 11-15, 17, 20-23, 25 and 27-39 were examined and rejected. Claims 3-4, 6-7, 10, 16, 18-19, 24 and 26 were previously cancelled. Applicants amend claims 1, 2, 5, 13, 17, 22, 23, 25 and 28. Applicants submit additional claims 40-42. Applicants submit that no new matter is added herein as amendments to the claims and the additional claims are supported at least at Figs. 5 and 7-9; and paragraphs 21, 23, 40-41, 43 and 49 of the application.

Applicants would like to thank the Examiner for the helpful and detailed explanations in the ***Response to Arguments/Amendments*** section of the current Office Action.

Applicants would like to thank the Examiner for the Examiner Interview performed on March 11, 2010, but disagree with sections of the current Office Action that refer to, and cannot find any evidence in Applicants' record of, Applicants' acknowledgement during the interview of any specific "problems in claim language".

Applicants respectfully request reconsideration of the pending claims and consideration of the additional claims.

I. Claims Rejected Under 35 U.S.C. § 101

The Patent Office rejects claims 22 and 25 for being directed towards non-statutory subject matter.

Applicants amend claims 22 and 25 as suggested by the Patent Office, to cure the rejections of independent claims 22 and 25.

II. Claims Rejected Under 35 U.S.C. § 112

The Patent Office rejects claims 1-2, 5, 8-9, 11-15, 17, 20-23, 25 and 28-39 are rejected under 35 U.S.C. § 112, second paragraph, due to various typographical errors which use the terms "combined data packet", "combined data for transmission" or "combined data packet for transmission". Applicants have amended these terms to require a "combined data packet

transmission” such as supported by the application as agreed to during the March 11, 2010 interview, and as noted at the end of pages 8 and 9 of the current Office Action.

Next, the patent Office rejects claim 28 for reciting “wherein the combined data transmission is a single databurst transmission during a single time of data of the first isochronous data packets appended at its endpoints to an endpoint of the second isochronous data transmission.” Applicants note that claim 28 requires “data of the first isochronous data packet transmission appended at its endpoint to an endpoint of the second isochronous data packet transmission,” which may be described at least by embodiments of the application, without limitation thereto, as isochronous transmissions that keep their associated header and are appended in a serialized manner instead of modifying the data of the isochronous data transmissions, such as shown in Figs. 7-9 and described at paragraph 45 of the application.

The Patent Office rejects claims 22-23 and 36 under 35 U.S.C. § 112, first paragraph, because claim 22 requires “a combined data packet for transmission, … of data of the at least two isochronous data packets appended at endpoints of the data.” Applicants have amended claim 22 to require a “combined data packet transmission” which is supported, as noted above for the § 112, second paragraph rejections. Moreover, requiring “at least two isochronous data packets appended at their endpoints of the data” is supported at least as identified above regarding the corresponding limitation of claim 28.

Thus, upon reading at least Figures 5, 7-9 and paragraphs 15, 49, 43, 45, 47 and 21 of the application, a practitioner in the art would find the above-noted limitation clearly supported. For example, a practitioner would find such a transmission clearly defined in the application text and figures.

III. Claims Rejected Under 35 U.S.C. § 103

The Patent Office rejects claims 1-2, 13-15, 22-23, 28-30, 32, 34, and 36-39 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Publication 2002/0052990 to Chan et al. (“Chan”) in view of U.S. Patent 6,151,334 to Kim et al. (“Kim”), further in view of U.S. Patent No. 5,754,798 to Uehara et al. (“Uehara”). The Patent Office rejects claims 5, 8-9, 11-12, 17, 20-21, 25, 27 and 35 under 35 U.S.C. § 103(a) as being unpatentable over Chan in view of Kim.

The Patent Office rejects claim 31 under 35 U.S.C. § 103(a) as being unpatentable over Chan in view of Kim and Uehara, further in view of U.S. Patent 6,288,896 to Hsu et al. (“Hsu”).

Applicants disagree with the rejection above for claim 1. Claim 1 is not taught or enabled by the references for at least the reason that Chan and Kim fail to teach or enable apportioning at least a portion of the total memory bandwidth amongst the plurality of bandwidth requests according to a power managed profile; determining when to combine data of at least two isochronous data packet transmissions into a combined data packet transmission based on a data transmission policy based on the power managed profile; satisfying at least two of the plurality of bandwidth requests each with at least one of the plurality of portions of the total memory bandwidth by combining data of at least two isochronous data packet transmissions of digital video data or digital audio data into a combined data packet transmission, wherein the combined data packet transmission is a single databurst transmission during a single time of data of the at least two isochronous data packets appended at endpoints of the data; and determining when to transmit the combined data packet transmission based on the data transmission policy, as required by claim 1.

Kim and Chan simply teach that isochronous data from more than one bus can be combined onto a single bus, but do not specify the level of detail required to teach or motivate a single databurst transmission during a single time of data of two isochronous data packets appended at their endpoints, determining when to combine data of at least two isochronous data packet transmissions into a combined data packet transmission and determining when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile, as required by claim 1 (e.g. see Kim claim 1, second paragraph and Chan data stream from 114 and 138 combined into a stream on bus 116 of Fig. 1).

FIG. 1 and paragraph 76 of Chan teach that multiplexer 412 permits exchanging signals between IDE-bus extension 129 and either IDE-bus 128 or state machine 202. Moreover, audio interface IC 102 permits only one of various IDE devices to be connected to IDE-bus extension 129 at one time (e.g., only one device can exist in place of CD-ROM drive 138). Specifically, either CD-ROM drive 138, a hard disk, a Digital Video Disk (DVD) drive, a ZIP drive, or a Super Disk may be connected or disconnected from IDE-bus extension 129 (see lines 11-15 of paragraph 76). Consequently, Chan does not teach more than one device connected to extension

129 at a single time. Thus, the Patent Office has not identified and Applicants are unable to find any teaching or enablement in the cited references of the above noted limitations, as required by claim 1.

Moreover, Applicants assert that IDE-bus extension 129 of Chan is not enabled to teach the above noted limitations of claim 1, and respectfully request the Patent Office provide a reference to support the position that either extension 129 or bus 128 can combine data of at least two isochronous data packet transmissions into a combined data packet transmission, as required by claim 1.

In addition, by combining the data of at least two isochronous data packet transmissions of digital video data or digital audio data into a single combined isochronous data packet transmission, wherein the combined data packet transmission is a single databurst transmission during a single time of data of the at least two isochronous data packets appended at their endpoints, determining when to combine data of at least two isochronous data packet transmissions into a combined data packet transmission and determining when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile, embodiments described in the specification, for example, without limitation thereto provide the unexpected benefits of: (1) transmitting appended isochronous data during an opportunistic data transmission or during a time identified for transmitted a combined isochronous data transmission, but prior to a time delay compliance limit for transmitting the isochronous data (see paragraph 14 of the application; and new claims 40-42); (2) reducing the number of times data must be transmitted and reducing power consumed in order to transmit isochronous data, since the components necessary to transmit the data need to be powered up less frequently (see paragraph 49 and FIGs. 6-9 of the application). However, none of the references teach or enable such benefits.

Instead, Chan discloses different power management routines (PMR) that may be executed to cause a computer to enter different operating modes based on the ACPI specification, which can cause a computer to reach low power states by not executing programs, turning devices on and off, and not preserving the system context during these states (see paragraphs 9-14). Moreover, the ACPI specification defines device power states such as where

the device is completely active, preserves more or less context, or has power fully removed (see paragraphs 15-19). Thus, the CPU may monitor peripheral devices, such as CD-ROMs, to suspend them and resume them to operation (see paragraphs 21-22). However, in each of these instances, some portion of the computer must remain energized (see paragraph 24). The primary purpose of Chan is to provide a CD-ROM subsystem that couples a bus of a computer subsystem to a CD-ROM drive and its control buttons, such that the system permits turning the computer system off while the audio interface autonomously responds to control buttons (e.g., asynchronous inputs) of the CD-ROM drive (see Abstract; paragraphs 42-43 and 51; and figs. 2 and 6-8). It is noted that the ACPI power management routines (PMRs) formed no part of the invention of Chan (see paragraph 41). For example, Chan teaches that multiplexer 412 may be enabled to permit exchanging of signals or disabled to isolate signals to connect or disconnect IDE devices from IDE-bus extension 129 (see paragraph 76). Specifically, Chan describes that transmission gates may cause delays or power drain because communication between bus bridge IC 124 and IDE device 138 go through IC 102 (see paragraph 73).

Alternatively in Figs. 7-8, in a first operating mode the computer system of Chan is energized and operating, and the audio interface IC relays commands (e.g., asynchronous inputs) and data; in a second operating mode, the computer system is not energized, and the audio interface IC autonomously responds to signals received from the CD-ROM control buttons (e.g., asynchronous inputs) which cause the CD-ROM drive to play the audio CD; in a third operating mode, in which the computer system is energized and operating, the IC receives commands from the CD-ROM control buttons (e.g., asynchronous inputs) and stores them for subsequent retrieval by a program executed by the computer (see paragraphs 80-85 and Figs. 7-8).

Consequently, none of these sections teach or enable the above noted limitations of claim 1. For example, without limitation thereto, claim 1 requires something more than the references make obvious, which is at least, determining when to combine data of at least two isochronous data packet transmissions into a combined data packet transmission and determining when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile.

Finally, Chan does not teach, enable or consider a power managed profile based at least on interlock driven asynchronous activity and isochronous data communication, where the profile causes the bandwidth to be apportioned amongst the request, as required by claim 1.

Arguments similar to those above for claim 1 apply to similar limitations of independent claim 22.

Applicants disagree with the rejection above for claim 2 for at least the reason that the cited references do not make obvious a data transmission policy to manage delaying transmission of a first isochronous data transmission and to manage combining data of the first isochronous data packet transmission with data of the second data packet transmission into a combined data packet transmission, as required by claim 2. The Patent Office relies on Chan to teach delaying transmission of a first isochronous data transmission. Applicants disagree. Specifically, Chan describes that transmission gates may cause delays or power drain because communication between bus bridge IC 124 and IDE device 138 go through IC 102 (see paragraph 73). However, a description of unknown amounts of delay or power drain caused by transmission gates of an IC does not teach or make obvious managing delaying transmission of an isochronous data packet transmission and combining that data packet with data of the second data packet transmission, as required by claim 2. Specifically, claim 2 requires something more in that the first isochronous transmission packet is delayed and its packet data is combined with packet data of another transmission, such as to achieve a balance between total power available and minimum bandwidth requirements of individual entities (see paragraph 14 of specification); and/or to reduce power consumed in order to transmit data (see paragraph 49 of specification). Hsu, Wu, Na, and MacDonald also fail to teach the combined data packet transmission of claim 2.

Next, Applicants disagree with the rejection above of independent claim 5 for at least the reason that the cited references do not teach or make obvious determining when to delay transmission of a first isochronous data transmission having media data of digital video data or digital audio data to be transmitted to or from a first isochronous device based on a data transmission policy based on the power managed profile; delaying transmission of the first isochronous data transmission; determining when to append the first isochronous data packet transmission with a second isochronous data packet transmission having media data of digital

video data or digital audio data to be transmitted to or from the first isochronous device into a combined data packet transmission based on the data transmission policy; appending the first isochronous data packet transmission with a second isochronous data packet transmission..., wherein the combined data packet transmission is a single databurst transmission during a single time of data of the first isochronous data packet transmission appended at its endpoint to an endpoint of the second isochronous data packet transmission, wherein appending is performed according to a data transmission policy; using the transmission policy to identify a plurality of transmission time periods during which to transmit a plurality of combined isochronous data packet transmissions; and using the transmission policy to select a time to transmit the combined data packet transmission, wherein selecting includes selecting between a transmission time of an opportunistic data transmission and a transmission time of a combined isochronous data packet transmission, as required by amended claim 5.

As noted above for claim 1, Chan and Kim do not teach, and cannot teach combined isochronous data packet transmissions having media data of digital video data or digital audio data from at least two isochronous data packet transmissions, wherein the combined data packet transmission is a single databurst transmission during a single time of data of the first isochronous data packet transmission appended at its endpoint to an endpoint of the second isochronous data packet transmission. In addition, as noted above for claim 1, Chan and Kim do not teach, determining when to append data of at least two isochronous data packet transmissions into a combined data packet transmission and determining when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile, as required by claim 5.

In addition, an argument analogous to the one above for claim 2 applies here as well to show that Chan does not teach determining when to delay a transmission of isochronous data packet and combining that transmission packet with a second isochronous data packet transmission in to a combined data packet transmission based on a transmission policy based on the power managed profile, as required by claim 5. Without limitation thereto, such claim requirements require something more of at least determining when to delay, combine and transmit isochronous data packets, such as to achieve a balance between total power available and minimal bandwidth requirements of individual entities (see paragraph 14 of the

specification); and/or to reduce power consumed in order to transmit data (see paragraph 49 of the specification; and new claims 40-42).

In any event, the Patent Office has not identified Applicants unable to find any teaching in the references of selecting a transmission time of an opportunistic data transmission and a transmission time of a combined isochronous data packet transmission as required by claim 5.

In addition, by including the selection between the transmission time of an opportunistic data transmission and that of a combined isochronous data packet transmission, embodiments described in the specification of the present application (such as described at paragraph 49 of the Application), for example, without limitation thereto, provide unexpected benefits of reducing power consumed in order to transmit data since the components necessary to transmit the data need to be powered up less frequently (1) because the transmissions are for isochronous data that is in combined packets (e.g., T₂ of Figure 8 and paragraph 38 and 49 of the Application), and (2) the packet transmissions may be piggyback with opportunistic transmissions (see T₀₁ of Figure 9 and paragraph 38 of the Application). However, none of the references cited describe or enable these benefits.

In addition, by including the power managed profile based at least on interrupt driven asynchronous activity and isochronous data communication, embodiments described in the specification provide the unexpected benefits of achieving a balance between total power available and minimum bandwidth requirement of individual entity, such as for asynchronous entities and isochronous entities as described at paragraphs 15 and 24-26 of the Application. However, none of the references described or enable such benefits.

Hsu fails to cure the deficiencies of the other references with respect to claims 1 and 5. Hsu teaches maximizing the life a battery of a computer (see col. 1, l. 28-30). However, Hsu does not teach the above noted limitations of claims 1 and 5, or benefits thereof as noted above.

In addition to being dependent upon allowable base claim 5, Applicants disagree with the rejection above of claim 8 for at least the reason that the cited references do not make obvious selecting a time to transmit the combined data packet transmission as a transmission time of one of an asynchronous data packet transmission and a third isochronous data packet transmission as

required by claim 8. An argument above with respect to claim 5 applies here as well. Specifically, Applicants traverse that such a limitation would be obvious to a person of ordinary skill and request the Patent Office provide a reference in support of that position in accordance with MPEP § 2144.03. Specifically, nothing in the references teaches, enables, or makes obvious a combined data packet transmission, or selecting a time to transmit a combined data packet transmission by selecting an asynchronous data packet transmission or a third isochronous data packet transmission, as required by claim 8, since an isochronous data packet transmission can be transmitted during any time of the required period. Also, as noted above, using Official Notice to support such a position is impermissible hindsight if it is derived only from Applicants' claims.

In addition to being dependent upon allowable base claim 5, Applicants disagree with the rejection above of claim 9 for at least the reason that the cited references do not teach or make obvious reducing a first frequency of transmission times related to transmitting the first isochronous data packet transmission to a less frequent second frequency of transmission times related to transmitting the combined data packet transmission, as required by claim 9. An argument analogous to the one above for claim 5 applies here as well. That is, the combined references do not teach, enable, or make obvious a combined data packet transmission, or reducing a frequency of transmission times, or, a less frequent second frequency of transmission times, as required by claim 9. Applicants traverse that any of such limitations would be obvious to a practitioner in the art, and request the Patent Office provide a reference in support of such position in accordance with MPEP §2144.03. Moreover, Applicants assert that saying such limitations would be obvious to a person of ordinary skill is impermissible hindsight as it gleaned only from the claims, since there is no teaching in any of the references of a combined data transmission, or reducing a frequency of data packet transmissions by combining data of transmissions.

In addition to being dependent upon allowable base claim 5, Applicants disagree with the rejection of claim 11, for at least the reasons that the cited references do not teach or make obvious delaying transmission of a second isochronous data packet transmission. An argument analogous to the one above for claim 5 applies here as well. Hence, Applicants traverse that

such a limitation would be obvious in accordance with MPEP §2144.03 and submit that saying that such a limitation is obvious is impermissible hindsight.

Next, Applicants disagree with the rejection of independent claim 13 for at least the reason that the cited reference do not teach a bandwidth manager configured to apportion at least a portion of a total memory bandwidth available for a time period, combining data of at least two isochronous data packet transmissions into a combined data packet transmission, wherein the combined data packet transmission is a single databurst transmission during a single time of data of the at least two isochronous data packets appended at endpoints of the data, wherein the plurality of isochronous devices are related to the plurality of isochronous applications run by a processor, and wherein the data rate requirements are associated with a plurality of time delay compliance limits for the plurality of isochronous devices; and determining when to combine data of at least two isochronous data packet transmissions into the combined data packet transmission and determine when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile, as required by amended claim 13. An argument analogous to the one above for claim 1 applies here. For example, it is against the primary purpose and principle of operation of Chan, to provide communication to a plurality of isochronous devices, as required by claim 13.

Applicants disagree with the rejection above of claim 17 for at least the reasons given above with respect to the corresponding limitations of claims 5 and 8. Hence, an argument analogous to the one above for claim 5 applies here as well.

Moreover, Applicants disagree with the rejection of claim 17 for at least the reason that the cited references do not teach isochronous data transmissions to or from a second isochronous device; or a data transmission manager determining when to delay and append data of at least two isochronous data packet transmissions into a combined data packet transmission and determining when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile, as required by claim 17. An argument analogous to the one above for claim 1 applies to show that Chan teaches away from and cannot be properly combined with the reference teaching isochronous communication to more than one isochronous device, determining when to delay and append data of at least two isochronous data

packet transmissions into a combined data packet transmission and determining when to transmit the combined data packet transmission according to a data transmission policy based on the power managed profile.

Applicants disagree with the rejection above for claim 25 for at least the reasons given above in support of corresponding claim 17. Thus, arguments analogous to those of claim 17 apply to the corresponding limitations of claim 25.

Applicants disagree with the rejection above of claim 28 and assert that claim 28 is allowable for at least the reasons given in support of claims 1 and 2 combined.

Moreover, Applicants disagree with the rejection of independent claim 28 for the additional reason that the cited references do not teach dividing the memory bandwidth, for the combined packet isochronous communication, into at least four portions to balance between total power available according to the power managed profile and the plurality of minimum bandwidth requirements of individual entities, as required by claim 28. An argument analogous to the one above for claim 1 applies here to show that it is against the principle of operation and primary purpose of Chan of providing a single interface to provide a low power CD player capability, as opposed to the multi-interface hub capability of claim 28.

In addition to being based on allowable base claim 28, Applicants disagree with the rejection above of claim 29 for at least the reason that the Applicants traverse that it would be obvious to a practitioner to identify a plurality of transmission time periods during which to transmit a plurality of combined isochronous data transmissions and select a time to transmit the combined data transmission between one of a transmission time of an asynchronous data transmission, a third isochronous data transmission, and a transmission time of one of a plurality of combined isochronous data transmissions as required by claim 29 in accordance with MPEP §2144.03. An argument analogous to the one above for claim 5 applies here as well. Moreover, as noted for claim 5, Applicants assert that saying such limitations are obvious to a person of skill because isochronous data needs to be transmitted (see current Office Action, page 12, lines 7-8) is impermissible hindsight and request that the Patent Office provide a reference to support such Official Notice, in accordance with MPEP §2144.03.

In addition to being based on allowable claim 28, Applicants disagree with the rejection above of claim 30 for at least the reason that the cited references do not teach or make obvious wherein the transmit policy transmits an opportunistic data transmission prior to expiration of a transmission time period, and having media data from at least two isochronous data transmissions, as required by claim 20. An argument analogous to the one above with respect to claims 7 and 29 applies here as well. That is, Applicants traverse Official Notice of such limitations and request the Patent Office provide a reference to support of such a position in accordance with MPEP §2144.03. Furthermore, such Official Notice is impermissible hindsight as it is gleaned only from Applicants' claim.

In addition to being based on allowable claim 1, Applicants disagree with the rejection of dependent claim 34 for at least the reason that none of the cited references teach combining data of a third and fourth isochronous data packet transmission with an asynchronous data packet transmission into the combined data packet transmission, as required by amended claim 34. Although Chan includes a keyboard and a mouse bus system 116, the Patent Office has not identified and Applicants unable to find any teaching or enablement in the cited references of the above noted limitations of dependent claim 4.

In addition, by combining data of the third and fourth isochronous data packet transmissions with data of an asynchronous data packet transmission into the combined data packet transmission, embodiments described in the specification, for example, without limitation thereto provide the benefits of: (1) transmitting together data from isochronous data transmissions and asynchronous data transmissions into a combined data transmission that can be transmitted during an opportunistic transmission or during a time identified for transmitting a combined isochronous data transmission, but prior to a time delay compliance for the isochronous data (see paragraph 14 of the application); and (2) reducing the number of times data must be transmitted and power consumed in order to transmit data since components necessary to transmit isochronous and asynchronous data need to be powered up less frequently to transmit the combined data packets (see paragraph 49 of the application; and new claims 40-42). Consequently, none of the cited references teach or enable such benefits.

In addition to being dependent upon an allowable base claim, Applicants disagree with the rejection of claim 37 for at least that Chan teaches away from and cannot be properly combined with a reference to teach dividing the total memory bandwidth, for the combined packet isochronous communication, into at least four portions, as required by claim 37. An argument analogous to the one above for the corresponding limits of claim 28 applies here as well. Specifically, Chan teaches against dividing the bandwidth for the combined packet isochronous communication into at least four portions, by teaching the primary purpose of providing a single channel, low power CD interface while power is not supplied to the computer or subsystems, by isolating the IDE-bus extension of the CD player from the IDE-bus and from the state machine (see Abstract and paragraph 76).

Any dependent claims not mentioned above or submitted is being patentable for the reasons provided above in support of their base claim as well as additional limitations of those dependent claims.

Hence, Applicants respectfully request all of the rejections above to be withdrawn.

IV. Additional Claims 40-42

Applicants submit that additional claims 40-42 are allowable for at least the reasons provided above and support of its base claim, as well as additional limitations of the dependent claim.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated:

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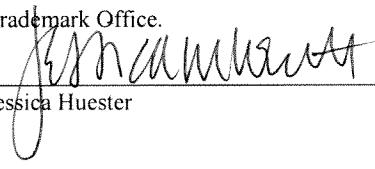


Angelo J. Gaz, Reg. No. 45,907

1279 Oakmead Parkway
Sunnyvale, California 94085-4040
Telephone (310) 207-3800
Facsimile (408) 720-8383

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Jessica Huester

2011-04-23

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